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(56) Documents cited

EP A2 0133985

EP A2 0122626

(58) Field of search

G4H

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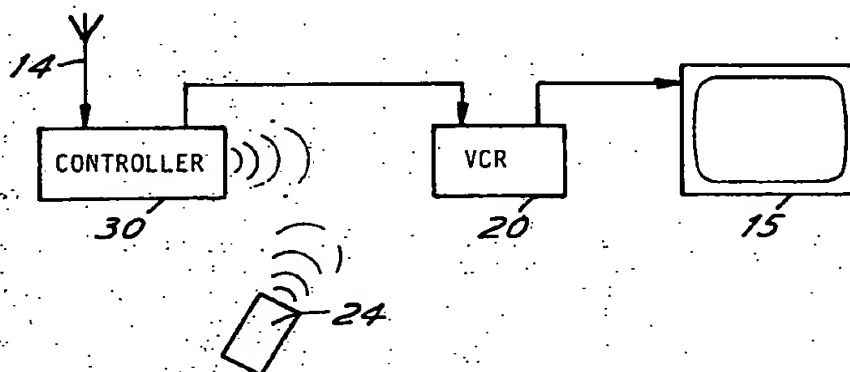
Selected US specifications from IPC sub-classes H03J

G08C

## (54) Video receivers and recorders

(57) A conventional video recorder (20) comprises electromechanical components, electronic circuits and a control unit with which there are associated both front panel controls and a user remote control unit with a sensor to which signals can be sent from a hand-held remote control unit (24). In addition to these conventional features an off-air remote controller (30) is provided. This is capable of decoding control signals associated with the television signal and includes an encoder which generates outputs which match those from the conventional user remote control unit (24).

FIG. 2



GB 2 192 743 A

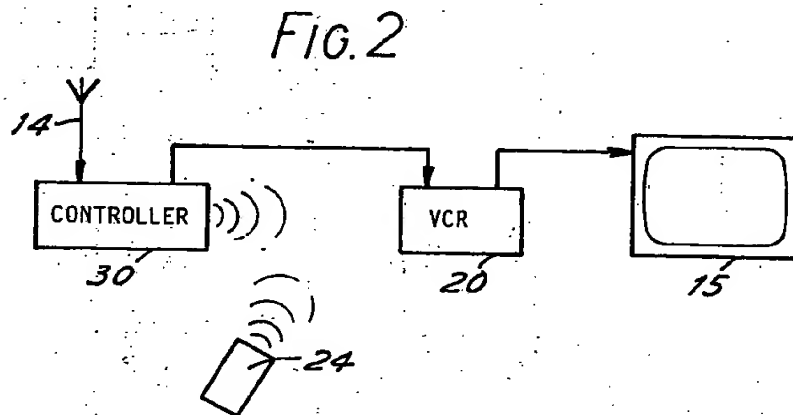
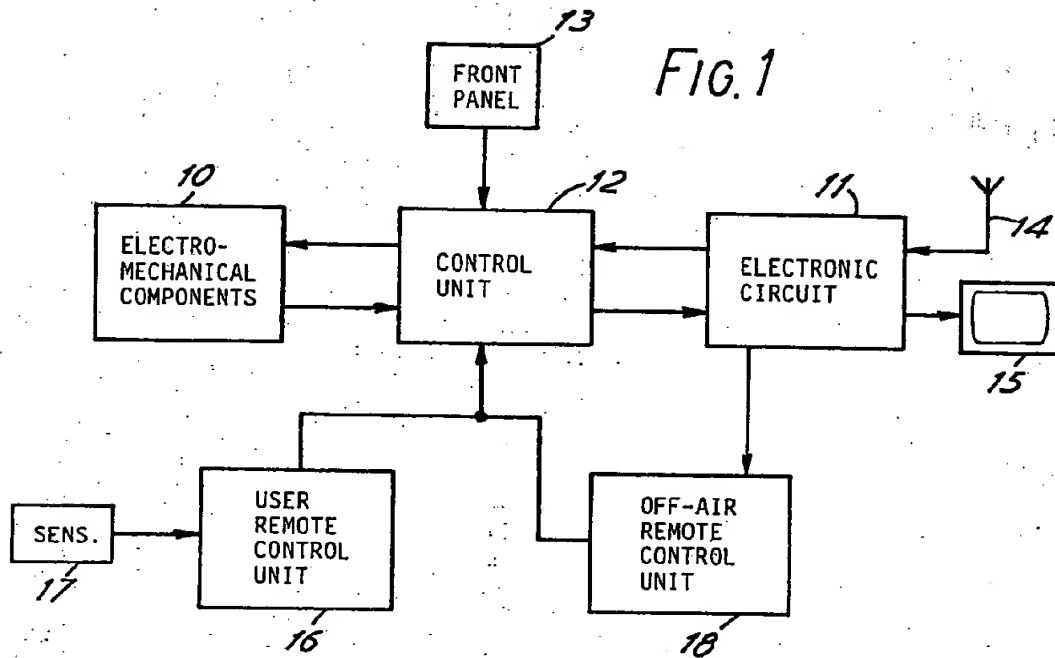


FIG. 3

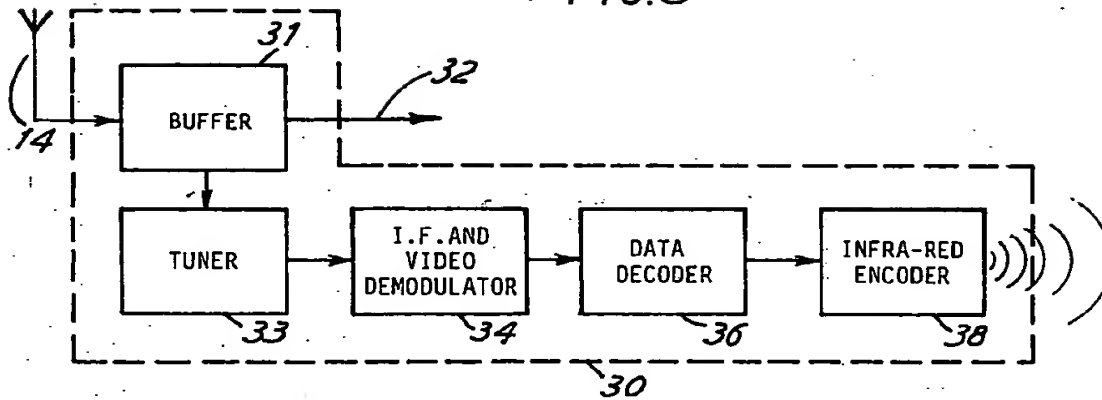
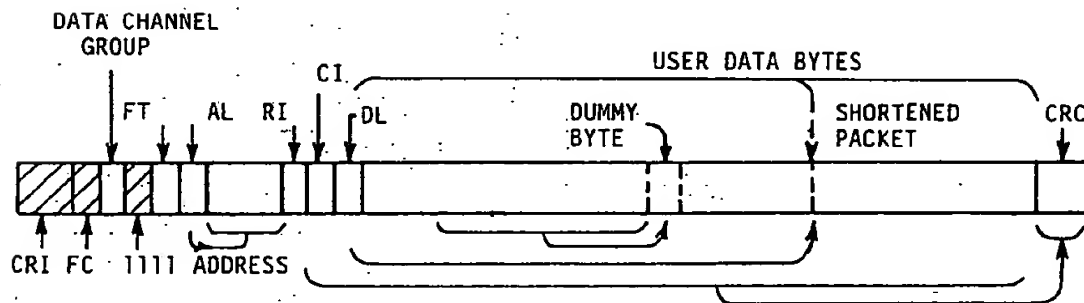


FIG. 4



## SPECIFICATION

## Improvements relating to video receivers and recorders

5 The present invention relates to television receivers and video recorders, commonly known as video tape recorders (VTR) or video cassette recorders (VCR). The essential components of a video recorder are the electromechanical components including the tape drive mechanism, control relays and electromagnets, magnetic heads and head scanning mechanism. Secondly there are the electronic circuits for processing the video signals being recorded or played back. Thirdly there is the control unit which controls the electromechanical components and the electronic circuit. The control unit may be very simple or provided with many facilities for scheduled recording, various modes of replay and so on. In any event, some means of providing control inputs have to be provided and, at the simplest, these may consist solely of front panel controls. However, it is well known to provide domestic video recorders with remote control units which either plug into the recorder or transmit infrared or ultrasonic control signals to a sensor on the recorder.

30 Television receivers are also well known with remote control units as well as front panel controls.

In the professional field it is known to control recorders by transmitting control signals along with the wanted information signal. The recorder responds appropriately to the received control signals. See for example GB 2126002.

40 The object of the present invention is to make it possible to add such facilities to domestic receivers and video recorders, in particular as an add on facility for existing receivers and recorders.

Video recorders are known from EP O 133985 and EP O 122626 which have two remote control units. The first unit comprises a bar code reader responsive to television programme schedule data input by the user to enter such data in a programme memory. The second unit receives control signals accompanying the broadcast signal and compares these with the data in the programme memory to determine the times at which the video recorder is switched on and off. The first unit simply automates the programming of the video recorder.

The present invention provides a video recorder including electromechanical components, an electronic circuit and a control unit therefor, a remote control unit responsive to user input signals to provide control signals to the control unit and a second remote control unit responsive to received control signals accompanying a received television signal, to decode the received control signals and provide

to the control unit control signals which match those provided by the first mentioned remote control unit.

The present invention also provides a television receiving apparatus including an electronic circuit and a control unit therefor, a remote control unit responsive to user input signals to provide control signals to the control unit and a second remote control unit responsive to received control signals accompanying a received television signal, to decode the received control signals and provide to the control unit control signals which match those provided by the first mentioned remote control unit.

In the present invention, the two remote control units can act independently as parallel, alternative means of control. Therefore the second unit can be provided as an add-on facility to an existing video recorder or receiver.

An embodiment of the invention will now be described, by way of example, with reference to the accompanying drawings, in which:

90 Figure 1 shows the main components of a video recorder,

Figure 2 is a diagram illustrating the physical set-up,

95 Figure 3 is a block diagram of an off-air remote controller, and

Figure 4 shows a known control signal format.

The video recorder shown in Figure 1 comprises the electromechanical components 10, the electronic circuits 11 and a control unit 12. The input to and output from the electronic circuit are symbolised by an aerial 14 and a television set 15. The control unit 12 is provided with conventional front panel controls 13.

The recorder is also provided with a conventional user remote control unit 16 which picks up signals directed on to an infrared sensor 17 by a hand held unit with buttons for effecting channel selection, record, playback and so on. The video recorder as so far described represents conventional practice. The recorder according to the present invention is provided with an off-air remote control unit 18 which can provide exactly the same output signals to the main control unit 12 as are conventionally provided by the user remote control unit 16. The off-air remote control unit 18 derives its input via the electronic circuit 11 from the received television signal which is accompanied by data signals, for example signals conforming to the German VPS standards. Such VPS codes are sometimes transmitted in Germany with the broadcast signal to control the operation of recorders remotely. In Figure 1 the off-air unit 18 is shown feeding directly into the main control unit 12. However, in the preferred practice of the invention, the off-air unit is not built into the video recorder itself but is constructed as

a separate controller which passes the control commands to the recorder using the input device on the recorder provided for the hand-held remote control unit. This has the advantage

that no modification whatsoever to the recorder is required. If the recorder uses a hand-held unit connected by wire, the controller is plugged in in place of the hand-held unit. This has the disadvantage that the hand-held unit cannot be used when the controller is connected. This problem could be overcome by providing the controller with a plug incorporating a socket for the hand-held unit.

In the case of infra-red or ultrasonic remote control systems, the controller radiates control signals to the sensor 17, just like the hand-held unit, which can still be used in the normal.

The arrangement of a receiving installation using such a broadcast controller is shown in Figure 2. In this case, the aerial 14 and the television receiver 15 are connected to the recorder 20 in the conventional manner except that the aerial signal is 'looped through' the separate off-air controller 30. The television receiver 15, the recorder 20 and the hand-held remote control unit 24 can all be used in the normal way except when the off-air controller 30 responds to codes in the transmitted signal. The controller 30 could be made to respond to signals in the VPS format, but the transmission efficiency and convenience can be improved by using teletext data signals for the control codes.

The main units of the off-air controller 30 are shown in Figure 3. Signals from the aerial 14 are buffered 31 to provide a 'loop-through' output 32 to the recorder 20 and to feed tuner and demodulator stages 33, 34 similar to those of a conventional television receiver. Teletext data signals corresponding to the available remote control functions are then extracted from the vertical blanking intervals of the signal by the data decoder 36 and re-encoded to produce infra-red (or ultrasonic) signals with the same coding format as those produced by the hand-held controller 24.

The structure of a suitable teletext data signal (known as Datacast) is shown in Figure 4. This consists of a two-level signal starting with Clock Run-In (CRI) and Framing Code (FC) data in the normal teletext format. Background detail for this system can be found in "BBC Datacast—The Transmission System" from the IERE Conference on Electronic Delivery of Data and Software, September 1986; IERE Conference Publication No. 69, pp.93-98.

The provision of a separate off-air remote control unit 18 makes it possible for the conventional domestic video recorder to make use of the data signals because the unit 30 effectively decodes these signals and converts them to control signals simulating those from the user remote control unit 24. It accordingly becomes possible to switch the recorder on

to record by remote control over the air, to select the channel being recorded, to terminate recording at the end of a program and so on.

The hand-held remote control unit 24 is usually dedicated to a particular application, that is to say it would emit only one set of control codes matching those for a corresponding video recorder (or television receiver). However the additional unit 30 could be capable of providing any one of a number of different sets of control signals and have a selector device for strapping the unit to provide the required set for a given application. Implementation could largely be in software terms with appropriate codes set up in ROM. Selection could be effected by plugging in different ROMs.

## 85 CLAIMS

1. A video recorder including electromechanical components, an electronic circuit and a main control unit therefor, a first remote control unit responsive to user input signals to provide control signals to the main control unit and a second remote control unit responsive to received control signals accompanying a received television signal, to decode the received control signals and provide to the main control unit control signals which match those provided by the first remote control unit.

2. A video recorder according to claim 1, comprising an input device for receiving the control signals from the first remote control unit, and wherein the control signals provided by the second remote control unit are fed to the said input device.

3. A video recorder according to claim 2, wherein the second remote control unit comprises a decoder for decoding the received control signals and an encoder for re-encoding the decoded signals as the control signals which match those provided by the first remote control unit.

4. A video recorder according to claim 3, wherein the encoder is an infra-red or ultrasonic encoder for radiating control signals to a sensor forming the said input device of the video recorder.

5. A video recorder according to any of claims 1 to 4, wherein the second remote control unit is capable of providing any one of a number of different sets of control signals and comprises a selector device for selecting one such set.

6. A video recorder according to claim 5, wherein the selector device comprises an interchangeable read-only memory device.

7. A controller for use with a video recorder having an input device for receiving control signals from a hand-held remote control unit, comprising an aerial input, means for receiving and demodulating broadcast television signals, a decoder for decoding control signals in the demodulated signals, and an encoder for re-

coding the decoded signals in a form for controlling the video recorder by way of the said input device.

8. A controller according to claim 7, comprising a buffer amplifier and an output for looping out the signal on the aerial input to the video recorder.

9. A controller according to claim 7 or 8, wherein the encoder is an Infra-red or ultrasonic encoder for radiating control signals to a sensor forming the said input device of the recorder.

10. A television receiving apparatus including an electronic circuit and a main control unit therefor, a first remote control unit responsive to user input signals to provide control signals to the control unit and a second remote control unit responsive to received control signals accompanying a received television signal, to decode the received control signals and provide to the main control unit control signals which match those provided by the first mentioned remote control unit.

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